The Analysis and Forecasting On Foreign Direct Investment, Tourism and Economic Growth in Asean Countries

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Abstract - This research analyzes and forecasts the relationship between foreign direct investment (FDI), tourism and economic growth (GDP) in Thailand, Singapore, Indonesia, Malaysia, Vietnam and Philippines, that countries with a high level of international tourism arrivals (ITA) and FDI in their economies. Based on the VAR model, the quarterly data for the period 2005-2019 are studied with two complementary methods of granger causality test and impulse response functions. The causality from GDP to ITA is found in all countries except Singapore and Malaysia. The causality from FDI to ITA is obtained in all countries except Thailand and Malaysia. The causality from ITA to GDP is got in all countries except Vietnam and Malaysia. The causality from GDP to FDI is obtained only in Malaysia. The causality from FDI to GDP is found only in Singapore and the causality from ITA to FDI is not found in the countries of our sample. This research reveals these countries have positive and negative effects on the interaction of FDI, ITA and GDP in different periods.
Keywords - Foreign Direct Investment, Tourism, Economic Growth, VAR

I. INTRODUCTION

With the deepening of economic globalization, foreign direct investment (FDI) plays a very important role in the flow of capital between countries. Especially for developing countries such as ASEAN countries. FDI flow into ASEAN increased from $108 billion in 2010 to $155 billion in 2018. The share of this inflow in the world's total rose from 5.7% to 12.9% during that time. The lack of capital and savings in ASEAN countries restricts their economic development in the open economy. In order to promote economic growth and balance national income, ASEAN countries can use foreign capital to develop their own economies. The inflow of FDI can make up for the shortage in domestic savings and increase the total capital, directly affects the economic growth of ASEAN countries.

Besides, the inflow of foreign direct investment is accompanied by the technology and talent of the home country. These advanced technologies and talents from the home country have certain externalities for the ASEAN countries. It can bring about technological innovations to different activities in these countries. According to the report, tourism in both developed and developing countries has a lower ratio of foreign direct investment than other economic activities (source: UNCTAD). However, this does not mean that foreign direct investment-related to tourism is insignificant. FDI generally improves tourism by providing capitals and infrastructures (such as international airports, highways, hotels and advanced technology); whereby promotes economic growth. In general, transportation, accommodation, food, arts, entertainment and recreation are the main destinations of tourism-related FDI inflows. From 2012 to 2018, FDI inflows in these related economic sectors of ASEAN countries reached to $14.15 billion. This means that FDI inflows related to tourism have increased, which can affect the development of tourism; whereby affect economic growth.

At the same time, ASEAN countries are important tourist destinations in Asian with rich tourism resources. The contribution of international tourism to a country's economy is usually assessed by its impact on GDP growth. From 2004 to 2017, the total number of foreign tourists traveling to ASEAN countries rose from 46.8 million to 121.6 million. During this period, international tourism receipts also increased from $38 billion to $138.9 billion. However, ASEAN countries still have problems with imperfect infrastructure such as tourism transportation. As the "10+1" China —ASEAN (Association of Southeast Asian Nations) Free Trade Zone was established and the "China—ASEAN Free Trade Zone Investment Agreement" was signed. From an economic point of view, ASEAN countries will become important investment target areas, attracting more capital to flow into these countries. it can increase capital investment to improve tourism infrastructure，and affect the development of ASEAN tourism.

In 2018, the gross domestic product of ASEAN countries reached $2986 billion, with a growth rate of 7.22%. With the continuous economic development of ASEAN countries, the relationship between FDI and tourism and economic growth is getting more closer. Drawing upon the discussion above, this paper seeks to investigate the relationship between foreign direct investment, tourism and economic growth in ASEAN countries.

II. LITERATURE REVIEW

According to existing research, many scholars studied the impact of foreign direct investment on economic

growth and the impact of tourism on economic growth. Some scholars studied the relationship between FDI and tourism. However, few studies

consider the relationship between the combination of

three factors. Therefore, the relationship between foreign direct investment, tourism and economic

growth in ASEAN countries needs further study.

2.1. FDI and Economic Growth Literature Review

Li and Zeng（2009）studied the relationship between FDI spillovers, financial market development, and China's economic growth. It was

found that foreign direct investment produced a

capital accumulation effect in Chinese provinces. Besides, Chinese provinces can take advantage of the spillover effects of foreign direct investment to increase competitiveness and ultimately promote GDP growth[1]; Fang（2014）studied GDP, foreign

direct investment, foreign other investment , and

foreign portfolio investment. It is concluded that the FDI, FOI and FPI of ASEAN countries have different

effects on economic growth. The impact of FDI on economic growth in Singapore and Vietnam is

positive. The effect of FDI on Malaysia's economic growth is short-term negative. FDI has no significant

effect on economic growth in other countries[2]; Sahraoui et al (2015) analyzed the relationship between foreign direct investment and economic growth in 65 countries. This showed that FDI has a

one-way causal relationship with GDP, which can allocate resources between different sectors to promote foreign direct investment. In Oceania, the

Middle East, North America, North Africa and Central African countries, there is a one-way causal relationship between foreign direct investment and economic growth. In Latin America and European

that there is a long-term causal relationship between

tourism-related FDI and tourism development, and there is no short-term causal relationship between variables. The authors gathered two tests to conclude

that there is a strong bidirectional causality between

FDI and tourism. Overall, foreign direct investment into the tourism sector has contributed to the growth

of inbound tourism and consumption[6]; Chen (2017)

studied the correlation between inbound tourism and

FDI under the theory of FDI determinants. It not only

confirmed the positive correlation between inbound tourism and FDI in the tourism industry, but also found that the development of inbound tourism has a

positive spillover effect on foreign capital inflows in

the non-tourism sector. The FDI attracted by the growth of inbound tourism will flow to the tourism industry and other industries. The author concluded that there is a mutual promotion between inbound

tourism and FDI in China [7]; Khoshnevis Yazdi (2017) analyzed the short-term and long-term effects

of EU countries' exchange rates, trade openness, foreign direct investment (FDI) and tourism receipts.

In the short term, FDI has a negative impact on tourism receipts, but in the long run it has a positive

impact on tourism receipts. The authors concluded that for most EU countries (Except Slovak Republic),

there is no bidirectional causality between FDI and tourism. Some EU countries (such as Germany, Hungary, Luxembourg, Netherlands and United Kingdom) have a unidirectional causality from FDI to

tourism. Some EU countries (such as Cyprus, Denmark, Lithuania, Luxembourg, Portugal and Romania) have a reverse relationship from tourism to

FDI[8].

2.3. Tourism and Economic Growth Literature

countries, there is a two-way causal relationship between foreign direct investment and economic growth[3]; Anita Kumari and A. K. Sharma (2018)

analyzed the causal relationship between per capita

electricity consumption, per capita GDP and foreign

direct investment in India. It is found that GDP has a unidirectional causality to FDI. This means that economic growth will attract more foreign direct

investment inflows in India[4].

2.2. FDI and Tourism Literature Review
Selvanathan et al. (2009) study the causal relationship

between FDI and the number of foreign tourists arrivals in India. It is concluded that there is only one-way causality between FDI and tourism. In other words, it is unidirectional causality from FDI to the

number of foreign tourists arrivals in India. The

authors shown that foreign direct investment plays an important role in expanding tourism in India[5]; Samimi et al. (2013) studied tourism-related foreign

direct investment (FDI) and tourism development in

developing countries.The results show that there is a long-term co-integration relationship between tourism

related FDI and tourism growth. The results indicate

Review

Xiang and Jiang (2013) examined the relationship between foreign tourism income, foreign direct investment and GDP in China. The authors performed
impulse response and Granger test to get DLFDI has
a negative effect on DLFTI and DLGDP, DLFTI has
zero effect on DLFDI and DLGDP, DLGDP has a negative effect on DLFDI and DLFTI. However, there is no bidirectional causality between DLFTI and
DLFDI; there is no bidirectional causality between DLGDP and DLFTI; there is a unidirectional causality running from DLGDP to DLFDI[9]; Ramphul Ohlan (2017) empirically studied the short-
and long-term effects of inbound tourism on India's economic growth. The paper concluded that the earnings of international tourism have a positive impact on India's economic growth both in the long
run and in the short term. In the long run, the earnings
of international tourism grew by an average of 1%, and India's GDP grew by 0.2%. There is a one-way long-term causal relationship from tourism to Indian
economic growth[10]; Chulaphan and Barahona (2017)
studied Thailand's industrial production index (IPI)

and international tourist arrivals to study

relationship between Thailand's tourism and economic growth. The number of tourists from South Asia have a unidirectional causality on economic

growth in Thailand. The economic growth of

Thailand has a unidirectional causality on the number of tourists from Oceania. There is no causal

relationship between Thailand's economic growth

and the number of tourists from East and Southeast

Asia, Europe[11]; Aratuo and L. Etienne (2019)

examined the relationship between GDP and the

actual output of the six US tourism industries. The authors have found that there is a one-way causal

series are stationary. Therefore, all variables are
employed in our research.
3.3. VAR and Granger causality test
The Granger causality test predicts whether two or
more variables have a causal relationship with each
other, so that one variable can be used to predict another. For example, if the variable X is the cause of
the variable Y, the past and present X time series data
can help improve the prediction of the variable Y.
Therefore, this method is employed to analyze the
relationship in these three variables in each country
separately. The method following the time series

relationship from GDP to six tourism industries. In the tourism receipts, the contribution of shopping, food and beverage and recreation and entertainment industries is generally higher than the contribution of the other three industries, namely air transportation,

[12]

accommodation and other transportation .

III. DATABASE AND METHODOLOGY

3.1. Data and variables

In this research, quarterly data for the 6 ASEAN countries: Thailand, Singapore, Indonesia, Malaysia, Vietnam and Philippines were obtained. All of the

data is secondary data and collected over the period

from the first quarter of 2005 to the third quarter of

2019 in CEIC Database.   In this analysis   and

forecasting, foreign direct investment is represented

by foreign   direct investment inflows; Tourism is

represented by   international   tourism   arrivals;

Economic growth is represented by gross domestic

product. Table   1 presents a   definition   of these

variables.

VAR of order k in this research are considered by equations (1),(2),(3) below.

$$FDI_t = \beta_0 + \beta_1 FDI_{t-1} + ... + \beta_k FDI_{t-k} + \gamma_1 ITA_{t-1} \tag{1}$$

$$... + \gamma_k ITA_{t-k} + c_1 GDP_{t-1} + ... + c_k GDP_{t-k} + \varepsilon_t$$

$$ITA_t = \beta_0 + \beta_1 ITA_{t-1} + ... + \beta_k ITA_{t-k} + \gamma_1 FDI_{t-1} \tag{2}$$

$$... + \gamma_k FDI_{t-k} + c_1 GDP_{t-1} + ... + c_k GDP_{t-k} + \varepsilon_t$$

$$GDP_t = \beta_0 + \beta_1 GDP_{t-1} + ... + \beta_k GDP_{t-k} + \gamma_1 FDI_{t-1} \tag{3}$$

$$... + \gamma_k FDI_{t-k} + c_1 ITA_{t-1} + ... + c_k ITA_{t-k} + \varepsilon_t$$

t represents time period and k represents amount of

lags included in the VAR model. Akaike Information Criterion (AIC), Schwarz Information Criterionn (SC) and Hannan-Quinn Information Criterion (HQC) are employed to select the appreciate lag length. The null

hypothesis of this approach are showed below.

ITA and GDP don't cause FDI

GDP and FDI don't cause ITA

FDI and ITA don't cause GDP

Variable	Definition	Unit
FDI	Foreign direct investment inflows	Billion Dollars
ITA	International tourism arrivals	Million
GDP	Gross domestic product	Billion Dollars

Table 1: Variables definition

3.2. Unit root test

Before doing time series VAR estimation, it is necessary to test whether the data is stationary or non-stationary by the unit root test. In order to ensure high accuracy of the analysis process in this study. An

augmented Dickey-Fuller test, Phillips-Perron test and Kwiatkowski Phillips Schmidt Shin test are employed. The data is converted into the form of

growth rate ($\frac{a_t - a_{t-1}}{a_t}$). The unit root test results

indicate that all variables are I(0) which shows the

3.4. Impulse response function

The impulse response function is a method that can be used to determine the response of an endogenous variable toward a shock from the other variables. It can show whether changes in the value of a variable have a positive or negative effect on other variables in the VAR model. Besides, It can show how long the effect of variables adjusts themselves to the mean value. To complement the analysis, the impulse response function offered to reveal how shocks to variables capturing FDI, ITA and GDP impacted one another for each country.

IV. EMPIRICAL RESULTS

4.1. Granger causality results

Table 2-7 shows the results of the Granger causality test for our sample of six ASEAN countries. The causality from GDP to ITA is found in all countries except Singapore and Malaysia. The causality from FDI to ITA is obtained in all countries except Thailand and Malaysia. The causality from ITA to GDP is got in all countries except Vietnam and Malaysia. The causality from GDP to FDI is obtained only in Malaysia. The causality from FDI to GDP is

found only in Singapore and the causality from ITA to FDI is not found in the countries of our sample.

Dependent variable	Excluded	Chi-sq	Optimum lag	Prob.
FDI	GDP	1.0973	4	0.8947
	ITA	3.1015	4	0.5554
GDP	FDI	2.6052	4	0.6259
	ITA	8.1283	4	0.0870
ITA	FDI	7.6394	4	0.1057
	GDP	19.412	4	0.0007

Table 2: Thailand Granger causality test results

Dependent variable	Excluded	Chi-sq	Optimum lag	Prob.

Dependent variable	Excluded	Chi-sq	Optimum lag	Prob.
FDI	GDP	0.9572	4	0.9162
	ITA	0.5735	4	0.9660
GDP	FDI	1.5399	4	0.8196
	ITA	11.499	4	0.0215
ITA	FDI	47.822	4	0.0000
	GDP	18.158	4	0.0011

Table 7: Philippines Granger causality test results

4.2. Impulse response function results

The impulse response function analysis of the VAR model considers how studied variables react to temporary shocks or innovation and for how long they adjust themselves to the mean value. A summary of the effects of FDI, ITA, and GDP in different

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FDI	GDP	4.1991	1	0.0404
	ITA	0.0002	1	0.9896
GDP	FDI	0.2526	1	0.6152
	ITA	0.4722	1	0.4920
ITA	FDI	0.0020	1	0.9647
	GDP	0.4735	1	0.4914

Table 3: Malaysia Granger causality test results

Dependent variable	Excluded	Chi-sq	Optimum lag	Prob.
FDI	GDP	3.0391	4	0.5513
	ITA	3.0679	4	0.5465
GDP	FDI	33.064	4	0.0000
	ITA	7.5391	4	0.0971
ITA	FDI	19.726	4	0.0006
	GDP	4.5291	4	0.3391

Table 4: Singapore Granger causality test results

Dependent variable	Excluded	Chi-sq	Optimum lag	Prob.
FDI	GDP	5.9857	3	0.1123
	ITA	0.9593	3	0.8111
GDP	FDI	2.7016	3	0.4400
	ITA	9.7857	3	0.0205
ITA	FDI	8.5299	3	0.0362
	GDP	11.922	3	0.0077

counties are showed in table 8-13.

Causal effect	Impulse response function
GDP→ITA	
ITA→GDP	

Table 8: Impulse response for innovation in Thailand
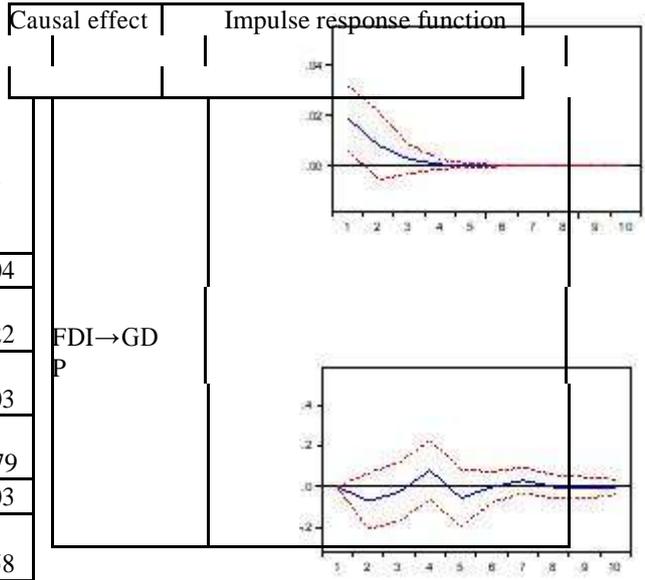
Causal effect	Impulse response function
GDP→FDI	

Table 9: Impulse response for innovation in Malaysia

Table 5: Indonesia Granger causality test results

Dependent variable	Excluded	Chi-sq	Optimum lag	Prob.
FDI	GDP	0.0601	2	0.9704
	ITA	2.6733	2	0.2622
GDP	FDI	0.4708	2	0.7903
	ITA	0.2379	2	0.8879
ITA	FDI	0.0020	2	0.0003
	GDP	0.4735	2	0.0058

Causal effect	Impulse response function
FDI→GDP	
FDI→ITA	
ITA→GDP	

Table 6: Vietnam Granger causality test results
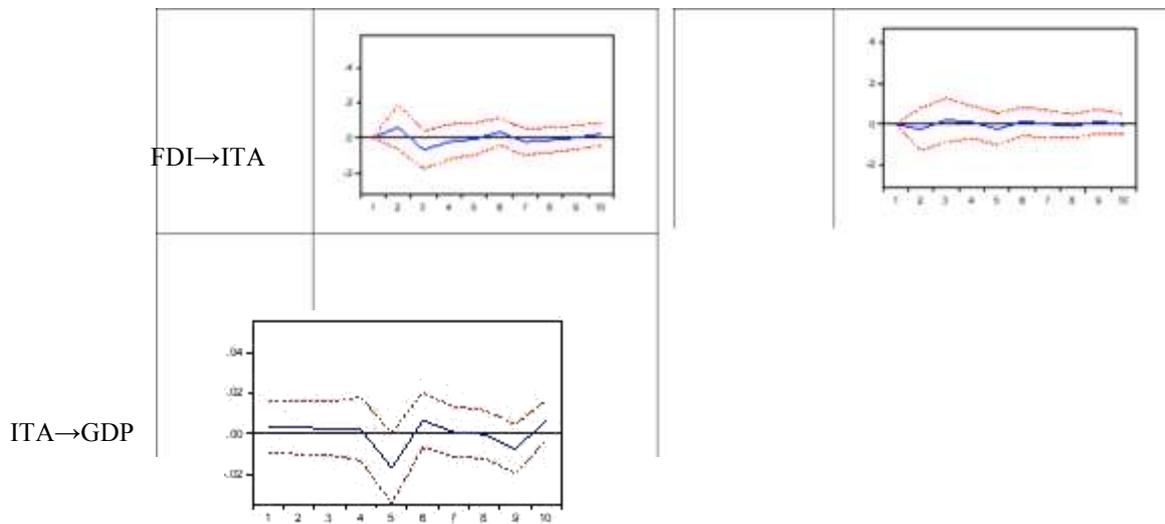
Table 10: Impulse response for innovation in Singapore

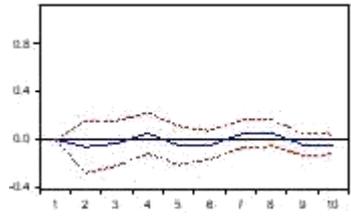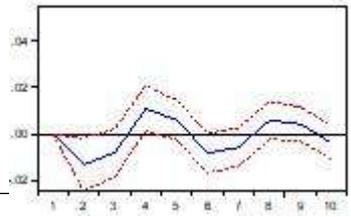| Causal effect	Impulse response function
FDI→ITA	
GDP→ITA	
ITA→GDP	
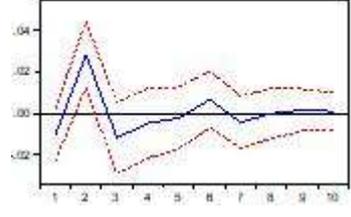
Table 11: Impulse response for innovation in Indonesia

Causal effect	Impulse response function
FDI→ITA	
GDP→ITA	

Table 12: Impulse response for innovation in Vietnam

Causal effect	Impulse response function
FDI→ITA	
GDP→ITA	
ITA→GDP	

Table 13: Impulse response for innovation in Philippines
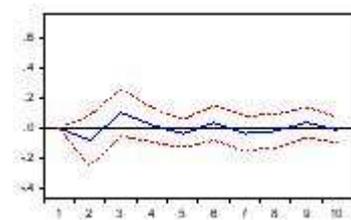
As table 8-13 shown, it reveals these countries have positive and negative effects on the interaction of FDI, ITA, and GDP in different periods. In the case of Singapore, the innovation of FDI to GDP has a firstly negative effect and then positive effect, and finally tend to zero; innovation of FDI to ITA has a firstly positive effect and then negative effect, and finally tend to zero; innovation of ITA to GDP has a positive and negative effect. In the case of Indonesia, the innovation of FDI to ITA has a positive effect and a negative effect, and finally tend to zero; innovation of GDP to ITA has a negative during period 1 -3,6-7 and a positive effect during period 4-5, 8-9; innovation of ITA to GDP has a positive during period 2,6 and a negative effect during 3-5. In the case of Thailand, the innovation of GDP to ITA has a negative effect, and finally tend to zero; innovation of ITA to GDP has a positive effect during period 1,3-4, and a negative effect during period 2,5,9. In the case of Malaysia, the innovation of GDP to FDI has a positive effect. In the case of Philippines, the

innovation of FDI to ITA has a positive effect; innovation of GDP to ITA has negative effect during period 1-2,6 and a positive effect during period 3-5, of countries, tourism has no correlation with foreign direct investment. Besides, economic growth can attract FDI inflows in Malaysia. The government and

ITA to GDP has a positive effect during period 1-2, 5-6, 9-10 and a negative effect during period 3-4, 7-8. In the case of Vietnam, the innovation of FDI to ITA has a firstly negative effect and then a positive effect, and finally tends to zero; innovation of GDP to ITA has a negative effect.

7-9; innovation of policymakers of these six ASEAN countries should develop suitable FDI policies and tourism policies to promote the economic growth of these ASEAN countries.

V. CONCLUSION

The objective of this research is to analyze and forecast the relationship between foreign direct investment, tourism and economic growth in ASEAN countries. In order to solve this problem, this research used two complementary methods of granger causality test and impulse response functions with the VAR model. The granger causality shows that FDI has a unidirectional causality to GDP in Singapore; FDI has a unidirectional causality to GDP in Malaysia; FDI has a unidirectional causality to ITA in Singapore, Indonesia, Vietnam and Philippines; There is bidirectional causality between GDP and ITA in Thailand, Indonesia and Philippines; GDP has a unidirectional causality to ITA in Vietnam; ITA has a unidirectional causality to GDP in Singapore. Impulse response function shows that FDI totally has

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a positive effect on tourism in these countries; ITA [8]
totally has a positive effect on tourism in these

countries; GDP has a positive effect to ITA
Malaysia. Besides, GDP totally has a negative effect
on ITA in these countries; FDI has a negative effect [9]
more than a positive effect on the GDP in Singapore.

situation
It is inconsistent with the actual and [10]

deserves further study.
In conclusion, foreign direct investment has a
promoting effect on tourism in Singapore, Indonesia, [11]

Vietnam and Philippines. The development

tourism promotes economic growth in Thailand, [12]
Singapore, Indonesia and Philippines. The effect of
foreign direct investment on economic growth is both
promoting and inhibiting in Singapore. In our sample

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